

Amendment to the Claims:

Please cancel claims 1-48 and add new claims 49-94 as follows:

Claims 1 – 48 (Cancelled)

49. (New) A piston mechanism with diverging pistons comprising:

a crankcase with a crankshaft, a cylinder with inlet and outlet openings and at least two pistons of opposite directions of movement, and connecting members interacting with three crankpins of the crankshaft, wherein one of the connecting members is joined with a middle crankpin and the other is joined with two outer crankpins, wherein at least one piston is firmly attached to connecting rods, which are rigidly fastened to one of the connecting members by their bases and are positioned in guide channels provided in the cylinder parallel to its axis, forming a synchronous group of connecting rods with a direction of movement corresponding to said connecting member, characterized in that the cylinder additionally comprises connecting rods which are firmly attached to at least one of pistons of opposite direction of movement, and by their bases are attached to the other connecting member, and are positioned in additional guide channels formed in the body of the cylinder parallel to abovementioned guide channels in alternating sequence with them, forming another synchronous group of connecting rods with a direction of movement corresponding to the other connecting member, wherein all guide channels are provided with through-cuts in the working surface of the cylinder with outlets into its cavity so that lateral faces of the connecting rods of the synchronous groups of the different directions facing the cavity of the cylinder form movable parts of its working surface, wherein the pistons are sequentially attached by their peripheries to the lateral faces of the connecting rods of the different synchronous groups, forming working chambers between them.

50. (New) The piston mechanism according to claim 49, wherein the connecting members are disposed between the crankshaft and the piston adjacent to it.

51. (New) The piston mechanism according to claim 50, wherein the connecting members have the form of an inner and an outer connecting member having central

opening for free movement within one another so that the outline of the inner connecting member repeats the outline of the central opening of the outer connecting member.

52. (New) The piston mechanism according to claim 51, wherein the inner connecting member has the form of two plates joined to one another, a lower plate with a stand and an upper plate with radial cuts around the periphery for the connecting rod of the synchronous group of this connecting member, attached to the lower plate by their bases, and with recesses between the connecting rods in both plates for the connecting rods of the other synchronous group.

53. (New) The piston mechanism according to claim 51, wherein the outer connecting member has the form of two multi-faceted plates, having central openings, rounded to an oval at their tops and attached to one another, the lower plate having two diametric stands and the upper plate having radial cuts around the outline of the central opening for the connecting rods of the synchronous group of this connecting member attached to the lower plate by their bases and with recesses between the connecting rods in both plates for the connecting rods of the other synchronous group.

54. (New) The piston mechanism according to claim 52, wherein the inner connecting member is joined with a middle crankpin of the crankshaft.

55. (New) The piston mechanism according to claim 53, wherein the outer connecting member is joined with two outer crankpins of the crankshaft.

56. (New) The piston mechanism according to claim 54, wherein the inner connecting member is joined with the middle crankpin of the crankshaft through a central crank-hinge frame.

57. (New) The piston mechanism according to claim 55, wherein the outer connecting member is joined to the outer crankpins of the crankshaft through lateral crank-hinge frames.

58. (New) The piston mechanism according to claim 56, wherein the central and lateral crank-hinge frames each have the form of a separable rectangular outline and a slide bar arranged within the outline for free translational movement engaging with the corresponding crankpin of the crankshaft.

59. (New) The piston mechanism according to claim 56, wherein the central crank-hinge frame has the stand joined with the stand of the inner connecting member via a pin.

60. (New) The piston mechanism according to claim 57, wherein each of the lateral crank-hinge frames has the stand joined with the corresponding stand of the outer connecting member via a pin.

61. (New) The piston mechanism according to claim 59, wherein the central and lateral crank-hinge frames are disposed between the guide plates arranged in the crankcase.

62. (New) The piston mechanism according to claim 54, wherein the inner connecting member is joined with the middle crankpin of the crankshaft via a central link.

63. (New) The piston mechanism according to claim 55, wherein the outer connecting member is joined with the outer crankpins of the crankshaft through lateral links.

64. (New) The piston mechanism according to claim 62, wherein the central link is joined with the stand of the inner connecting member via a pin.

65. (New) The piston mechanism according to claim 63, wherein each of the lateral links is joined with the corresponding stand of the outer connecting member via a pin.

66. (New) The piston mechanism according to claim 51, wherein three protrusions for attaching the pistons of one direction of movement are formed on the lateral faces

of the connecting rods of the synchronous group of the inner connecting member facing the cavity of the cylinder.

67. (New) The piston mechanism according to claim 51, wherein two protrusions for attaching the pistons of the opposite direction of movement are formed on the lateral faces of the connecting rods of the synchronous group of the outer connecting member facing the cavity of the cylinder.

68. (New) The piston mechanism according to claim 66, wherein the protrusions on the connecting rods of the synchronous group of the outer connecting member are arranged between the protrusions on the connecting rods of the synchronous group of the inner connecting member.

69. (New) The piston mechanism according to claim 66, wherein the protrusions on the connecting rods of one synchronous group are provided at equal distance to one another which is equal to the distance between the protrusions on the connecting rods of the other synchronous group.

70. (New) The piston mechanism according to claim 66, wherein the protrusions on the connecting rods of both synchronous group have increased area of their cross section.

71. (New) The piston mechanism according to claim 49, wherein the connecting rods of both synchronous group are arranged with wide faces and shoulders for the guide channels are arranged on the wide faces of the connected rods from the side of their lateral faces which are furthest away from the axis of the cylinder.

72. (New) The piston mechanism according to claim 71, wherein the shoulders are continuous.

73. (New) The piston mechanism according to claim 71, wherein the shoulders are interrupted.

74. (New) The piston mechanism according to claim 71, wherein the width of the wide faces of the connecting rods of both synchronous groups exceeds the thickness of these connecting rods more than twofold in radial direction without considering the shoulders.
75. (New) The piston mechanism according to claim 49, wherein the cross section of the connecting rods corresponds to the cross section of the guide channels.
76. (New) The piston mechanism according to claim 49, wherein the connecting rods are arranged in the guide channels with a gap of less than 0,02 mm.
77. (New) The piston mechanism according to claim 66, wherein the pistons are provided with annular engaging grooves for the protrusions of the connecting rods of the synchronous groups.
78. (New) The piston mechanism according to claim 49, wherein the pistons are provided with annular grooves for sealing rings.
79. (New) The piston mechanism according to claim 66, wherein the pistons are additionally attached to the protrusions of the connecting rods of both synchronous groups by bolts.
80. (New) The piston mechanism according to claim 49, wherein the guide channels for the connecting rods of both synchronous groups cover the entire length of the working cylinder.
81. (New) The piston mechanism according to claim 49, wherein the guide channels have a T-shaped cross section profile.
82. (New) The piston mechanism according to claim 49, wherein the guide channels for the connecting rods of the different synchronous groups alternate with each other by one channel.

83. (New) The piston mechanism according to claim 49, wherein the guide channels for the connecting rods of the different synchronous groups alternate with each other by two channels.
84. (New) The piston mechanism according to claim 49, wherein the guide channels are formed in the cylinder at equal distances from one another.
85. (New) The piston mechanism according to claim 49, wherein the through-cuts in the guide channels cover their entire length.
86. (New) The piston mechanism according to claim 49, wherein the inlet and outlet openings are located in the middle sections of the working chambers formed by two diverging pistons.
87. (New) The piston mechanism according to claim 86, wherein the working chambers are formed by diverging pistons and are equal in height.
88. (New) The piston mechanism according to claim 49, wherein an additional working chamber formed by one outer piston is two times smaller in height than the working chambers formed by the diverging pistons.
89. (New) The piston mechanism according to claim 49, wherein the inlet and outlet openings are arranged in the upper part of the additional working chamber formed by one outer piston.
90. (New) The piston mechanism according to claim 49, wherein the inlet and outlet openings are formed in spaces between guide channels.
91. (New) The piston mechanism according to claim 49, wherein the cylinder is provided with an adjustable lid arranged on the crankcase.
92. (New) The piston mechanism according to claim 49, wherein the crankcase comprises technical apertures.

93. (New) The piston mechanism according to claim 49, wherein the cylinder is provided with a lid.

94. (New) The piston mechanism according to claim 49, wherein the cylinder is provided with spark plugs in the working chambers.